

WHAT IS CLAIMED IS:

1 1. A spinal expansion apparatus comprising:
2 a body having a channel defined inside the body to movably receive therein a
3 bolt and passages defined to respectively and movably receive therein a support,
4 wherein the passages are orthogonal to the channel; and
5 means for advancing the bolt inside the channel; and
6 means for extending the supports out of the passages,
7 whereby the supports are simultaneously extending out of the passages and
8 travel a same distance resulting from the advancement of the bolt and thus two adjacent
9 spines are respectively and evenly separated.

10 2. The spinal expansion apparatus as claimed in claim 1, wherein the bolt has
11 V-shaped grooves respectively defined in an outer periphery of the bolt to correspond to
12 one of the supports.

13 3. The spinal expansion apparatus as claimed in claim 1, wherein each of the
14 supports has a bottom conical head facing the bolt and a top conical head facing out of
15 the passage for engagement with a surface of the spine.

16 4. The spinal expansion apparatus as claimed in claim 2, wherein each of the
17 supports has a bottom conical head facing the bolt to engage with a bottom face defining
18 the V-shaped groove and a top conical head facing out of the passage for engagement
19 with the surface of the spine.

20 5. The spinal expansion apparatus as claimed in claim 1, wherein each of the
21 passages has a shoulder formed in an inner periphery defining the passage and each of
22 the supports has a flange formed on an outer periphery of the support to prevent the
23 support from falling out of the passage.

1 6. The spinal expansion apparatus as claimed in claim 3, wherein each of the
2 passages has a shoulder formed in an inner periphery defining the passage and each of
3 the supports has a flange formed on an outer periphery of the support to prevent the
4 support from falling out of the passage.

5 7. The spinal expansion apparatus as claimed in claim 4, wherein each of the
6 passages has a shoulder formed in an inner periphery defining the passage and each of
7 the supports has a flange formed on an outer periphery of the support to prevent the
8 support from falling out of the passage.

9 8. The spinal expansion apparatus as claimed in claim 1, wherein the bolt
10 advancing means includes a driving hole defined in a side face of the body and a driving
11 bar with a first distal end so configured that when the first distal end of the driving bar is
12 inserted into the driving hole, rotation of the driving bar is able to force the bolt to move
13 in the channel.

14 9. The spinal expansion apparatus as claimed in claim 8, wherein the bolt
15 advancing means further includes a hole defined in the side face of the body and a
16 stabilizing bar connected to the driving bar via a connection plate and having a first
17 distal end detachably received in the hole.

18 10. The spinal expansion apparatus as claimed in claim 9, wherein the bolt
19 advancing means further includes a threaded hole defined in the side face of the body
20 and a securing bar connected to the driving bar via the connection plate and having a
21 threaded distal end screwed into the threaded hole.

22 11. The spinal expansion apparatus as claimed in claim 7, wherein the bolt
23 advancing means includes a driving hole defined in a side face of the body and a driving
24 bar with a first distal end so configured that when the first distal end of the driving bar is

1 inserted into the driving hole, rotation of the driving bar is able to force the bolt to move
2 in the channel.

3 12. The spinal expansion apparatus as claimed in claim 11, wherein the bolt
4 advancing means further includes a hole defined in the side face of the body and a
5 stabilizing bar connected to the driving bar via a connection plate and having a first
6 distal end detachably received in the hole.

7 13. The spinal expansion apparatus as claimed in claim 12, wherein the bolt
8 advancing means further includes a threaded hole defined in the side face of the body
9 and a securing bar connected to the driving bar via the connection plate and having a
10 threaded distal end screwed into the threaded hole.

11 14. The spinal expansion apparatus as claimed in claim 1, wherein the support
12 extending means includes V-shaped grooves defined in an outer periphery of the bolt
13 and bottom conical heads each formed on a distal end of the supports to be alternatively
14 engage with a bottom face defining the V-shaped groove so that when the bolt is moving
15 in the channel, the abutment between the bottom faces defining the V-shaped grooves
16 and the bottom conical heads of the supports is able to force the supports to extend out of
17 the passages.

18 15. The spinal expansion apparatus as claimed in claim 7, wherein the support
19 extending means includes V-shaped grooves defined in an outer periphery of the bolt
20 and bottom conical heads each formed on a distal end of the supports to be alternatively
21 engage with a bottom face defining the V-shaped groove so that when the bolt is moving
22 in the channel, the abutment between the bottom faces defining the V-shaped grooves
23 and the bottom conical heads of the supports is able to force the supports to extend out of
24 the passages.

1 16. The spinal expansion apparatus as claimed in claim 8, wherein the support
2 extending means includes V-shaped grooves defined in an outer periphery of the bolt
3 and bottom conical heads each formed on a distal end of the supports to be alternatively
4 engage with a bottom face defining the V-shaped groove so that when the bolt is moving
5 in the channel, the abutment between the bottom faces defining the V-shaped grooves
6 and the bottom conical heads of the supports is able to force the supports to extend out of
7 the passages.

8 17. The spinal expansion apparatus as claimed in claim 9, wherein the support
9 extending means includes V-shaped grooves defined in an outer periphery of the bolt
10 and bottom conical heads each formed on a distal end of the supports to be alternatively
11 engage with a bottom face defining the V-shaped groove so that when the bolt is moving
12 in the channel, the abutment between the bottom faces defining the V-shaped grooves
13 and the bottom conical heads of the supports is able to force the supports to extend out of
14 the passages.

15 18. The spinal expansion apparatus as claimed in claim 10, wherein the support
16 extending means includes V-shaped grooves defined in an outer periphery of the bolt
17 and bottom conical heads each formed on a distal end of the supports to be alternatively
18 engage with a bottom face defining the V-shaped groove so that when the bolt is moving
19 in the channel, the abutment between the bottom faces defining the V-shaped grooves
20 and the bottom conical heads of the supports is able to force the supports to extend out of
21 the passages.

22 19. The spinal expansion apparatus as claimed in claim 13, wherein the support
23 extending means includes V-shaped grooves defined in an outer periphery of the bolt
24 and bottom conical heads each formed on a distal end of the supports to be alternatively

- 1 engage with a bottom face defining the V-shaped groove so that when the bolt is moving
- 2 in the channel, the abutment between the bottom faces defining the V-shaped grooves
- 3 and the bottom conical heads of the supports is able to force the supports to extend out of
- 4 the passages.